

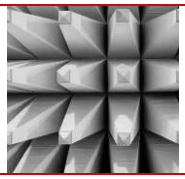

CETECOM™
CETECOM ICT Services
consulting - testing - certification

TEST REPORT

Test report no.: 1-6234/13-03-08-B

ilac-MRA DAkkS Deutsche Akkreditierungsstelle D-PL-12076-01-01

Testing laboratory

CETECOM ICT Services GmbH
Untertuerkheimer Strasse 6 – 10
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Phone: + 49 681 5 98 - 0
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Accredited Testing Laboratory:
The testing laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025 (2005) by the Deutsche Akkreditierungsstelle GmbH (DAkkS)
The accreditation is valid for the scope of testing procedures as stated in the accreditation certificate with the registration number: D-PL-12076-01-01
Area of Testing: Radio/Satellite Communications

Applicant

Research In Motion Limited
305 Phillip Street
Waterloo, ON N2L 3W8 / CANADA
Phone: +1 51 98 88 74 65
Fax: +1 51 98 88 69 06
Contact: Masud Attayi
e-mail: mattayi@rim.com

Manufacturer

Research In Motion Limited
305 Phillip Street
Waterloo, ON N2L 3W8 / CANADA

Test standard/s

47 CFR 27	Title 47 of the Code of Federal Regulations; Chapter I; Part 27 - Miscellaneous wireless communications services

For further applied test standards please refer to section 3 of this test report.

Test Item

Kind of test item:	**Blackberry GSM Phones**
Model name:	**RFX101LW**
FCC ID:	**L6ARFX100LW**
Frequency:	LTE Band 4: lowest channel: 1710.7 MHz; highest channel: 1754.3 MHz LTE Band 13: lowest channel: 779.5 MHz; highest channel: 784.5 MHz
Technology tested:	LTE
Antenna:	Integrated antenna
Power supply:	3.8 V DC by Li-Polymer battery

This test report is electronically signed and valid without handwriting signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

Test report authorised:

p.o.

cn=Christoph Schneider, o=CETECOM ICT Services GmbH, ou=SND-120402, email=christoph.schneider@cetecom.com, c=DE
2013.08.08 13:54:02 +02'00'

Stefan Bös
Senior Testing Manager

Test performed:

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2013.08.08 12:56:50 +02'00'

Andreas Luckenbill
Expert

1 Table of contents

2 General information

2.1 Notes and disclaimer

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This test report is electronically signed and valid without handwritten signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

2.2 Application details

Date of receipt of order:	2013-05-29
Date of receipt of test item:	2013-06-03
Start of test:	2013-06-03
End of test:	2013-07-12
Person(s) present during the test:	-/-

3 Test standard/s

Test standard	Date	Test standard description
47 CFR 27	01.10.2012	Title 47 of the Code of Federal Regulations; Chapter I; Part 27 - Miscellaneous wireless communications services

4 Test environment

Temperature:	T_{nom}	+22 °C during room temperature tests
	T_{max}	no tests under extreme conditions
	T_{min}	no tests under extreme conditions
Relative humidity content:		62 %
Barometric pressure:		not relevant for this kind of testing
Power supply:	V_{nom}	3.8 V DC by Li-Polymer battery
	V_{max}	no tests under extreme conditions
	V_{min}	no tests under extreme conditions

5 Test item

Kind of test item	**:**	**Blackberry GSM Phones**
Type identification	**:**	**RFX101LW**
S/N serial number	**:**	**IMEI: 004401139608687;** **IMEI: 004401139608661**
HW hardware status	**:**	**CER-54735-001 Rev1-x04-00**
SW software status	**:**	**OS Version: 10.2.0.345** **Build: 534884**
Frequency band [MHz]	**:**	**LTE Band 4: lowest channel: 1710.7 MHz; highest channel: 1754.3 MHz** **LTE Band 13: lowest channel: 779.5 MHz; highest channel: 784.5 MHz**
Type of modulation	**:**	**QPSK, 16-QAM**
Antenna	**:**	**Integrated antenna**
Power supply	**:**	**3.8 V DC by Li-Polymer battery**

5.1 Additional information

Test setup- and EUT-photos are included in test reports: 1-6234/13-03-01_AnnexA
1-6234/13-03-01_AnnexC

6 Test laboratories sub-contracted

None

7 Summary of measurement results

☒	No deviations from the technical specifications were ascertained
☐	There were deviations from the technical specifications ascertained

TC identifier	Description	verdict	date	Remark
RF-Testing	CFR Part 27	passed	2013-08-08	-/-

7.1 LTE – Band 4

Test Case	temperature conditions	power source voltages	Pass	Fail	NA	NP	Remark
RF Output Power	Nominal	Nominal	☒	☐	☐	☐	-/-
Frequency Stability	Nominal	Nominal	☐	☐	☐	☒	-/-
Spurious Emissions Radiated	Nominal	Nominal	☒	☐	☐	☐	-/-
Spurious Emissions Conducted	Nominal	Nominal	☐	☐	☐	☒	-/-
Block Edge Compliance	Nominal	Nominal	☐	☐	☐	☒	-/-
Occupied Bandwidth	Nominal	Nominal	☐	☐	☐	☒	-/-

Note: NA = Not applicable; NP = Not performed

7.2 LTE – Band 13

Test Case	temperature conditions	power source voltages	Pass	Fail	NA	NP	Remark
RF Output Power	Nominal	Nominal	☒	☐	☐	☐	-/-
Frequency Stability	Nominal	Nominal	☐	☐	☐	☒	-/-
Spurious Emissions Radiated	Nominal	Nominal	☒	☐	☐	☐	-/-
Spurious Emissions Conducted	Nominal	Nominal	☐	☐	☐	☒	-/-
Block Edge Compliance	Nominal	Nominal	☐	☐	☐	☒	-/-
Occupied Bandwidth	Nominal	Nominal	☐	☐	☐	☒	-/-

Note: NA = Not applicable; NP = Not performed

8 RF measurements

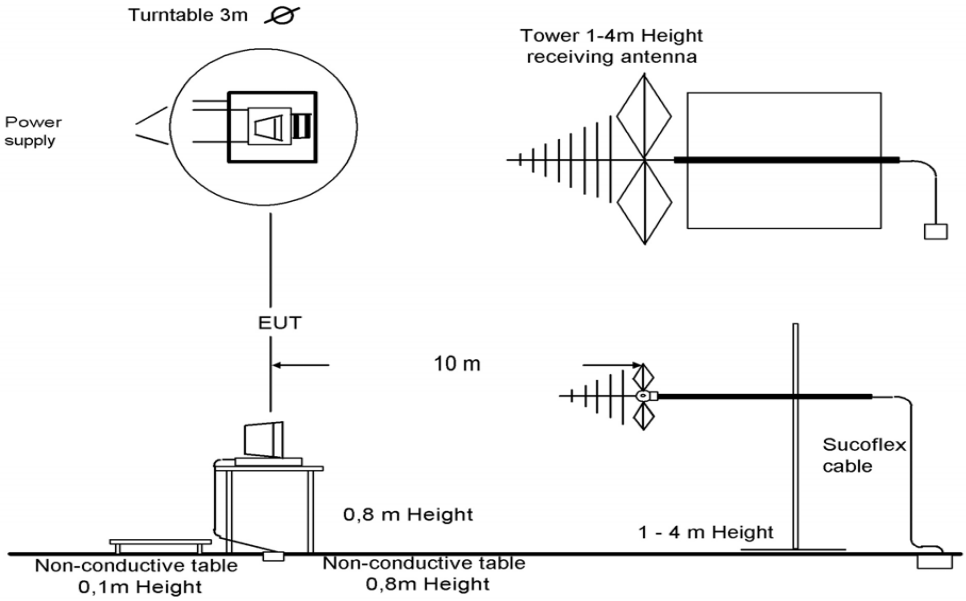
8.1 Description of test setup

For the spurious measurements we use the substitution method according TIA/EIA 603.

8.1.1 Radiated measurements

The radiated emissions from the EUT are performed in a semi anechoic chamber. The EUT is placed on a conductive turntable and powered with nominal voltage. The signalling is performed either from outside the chamber with a signalling unit (AP or other) by air link using a signalling antenna or directly by special test software from the customer.

Semi anechoic chamber

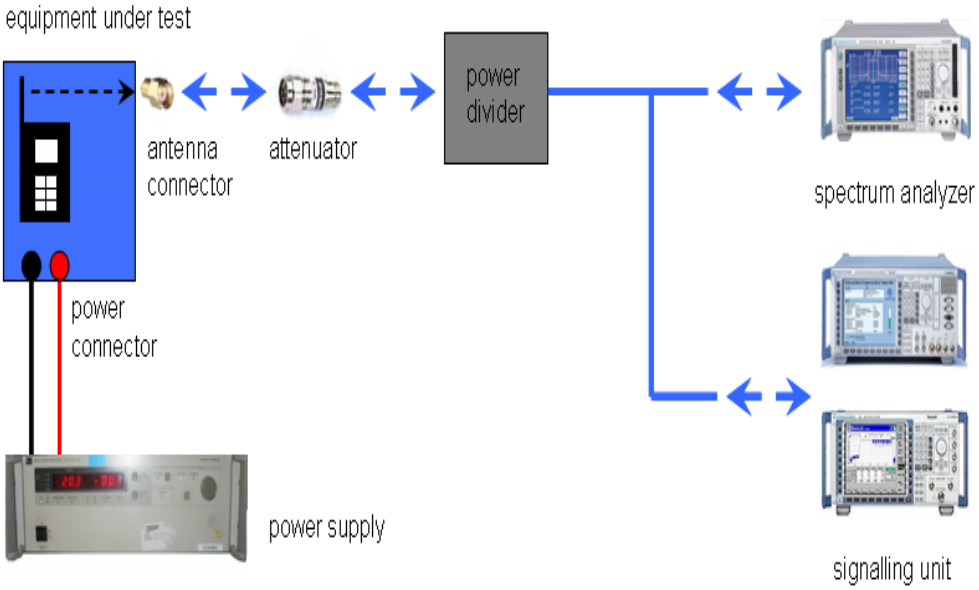


Picture 1: Diagram radiated measurements

9 kHz - 30 MHz:	active loop antenna
30 MHz – 1 GHz:	tri-log antenna
> 1 GHz:	horn antenna

8.1.2 Conducted measurements

The EUT's RF signal is coupled out by the antenna connector which is supplied by the manufacturer. The signal is first 10dB attenuated before it is power divided (~6dB loss per branch). One of the signal paths is connected to the signalling unit (AP or other), the other one is connected to the spectrum analyzer. The specific losses for both signal paths are first checked within a calibration. The measurement readings on the signalling unit/spectrum analyzer are corrected by the specific test set-up loss. The attenuator, power divider, signalling unit and the spectrum analyzer are impedance matched on 50 Ohm. If special software is used, there is no power divider necessary.



Picture 2: Diagram conducted measurements

The term measuring receiver refers to either a selective voltmeter or a spectrum analyser.

Frequency being measured f	Measuring receiver bandwidth 6 dB	Spectrum analyser bandwidth 3dB
f < 150 kHz	200 Hz or	300 Hz
150 kHz ≤ f < 25 MHz	9 kHz or	10 kHz
25 MHz ≤ f < 1000 MHz	120 kHz or	100 kHz
1000 MHz ≤ f		1 MHz
NOTE: Specific requirements in CEPT/ERC/Recommendation 70-03 [2] shall be applied where applicable.		

8.2 LTE technologies supported by EUT

Channel bandwidth

	Band 4	Band 13
[MHz]		
1.4	☒	☐
3	☒	☐
5	☒	☒
10	☒	☒
15	☒	☐
20	☒	☐

8.3 Results LTE – Band 4

The EUT was set to transmit the maximum power.

8.3.1 RF output power

Description:

This paragraph contains average power, peak output power and EIRP measurements for the mobile station. In all cases, the peak output power is within the required mask (this mask is specified in the JTC standards, TIA PN3389 Vol. 1 Chap 7, and is no FCC requirement).

Measurement:

The mobile was set up for the maximum output power with pseudo random data modulation.

To determine the Peak-To-Average Power Ratio (PAPR) the measurement was performed with the Power Complementary Cumulative Distribution Function (CCDF).

Measurement parameters	
Detector:	Peak and RMS (Power in Burst)
Sweep time:	Auto
Video bandwidth:	Depends on Channel Bandwidth
Resolution bandwidth:	Depends on Channel Bandwidth
Span:	Zero Span
Trace-Mode:	Max Hold

Limits:

FCC	
CFR Part 27.1101 CFR Part 2.1046	
Nominal Peak Output Power	
+30.00 dBm In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.	

Results:

Output Power (radiated)			
Bandwidth (MHz)	**Frequency (MHz)**	**Average Output Power (dBm) QPSK - #RB=100%**	**Average Output Power (dBm) QPSK - #RB=1**
1.4	1710.7	22.7	-/-
	1732.5	23.1	-/-
	1754.3	23.4	-/-
3	1711.5	22.7	-/-
	1732.5	23.0	-/-
	1753.5	23.3	-/-
5	1712.5	22.7	-/-
	1732.5	23.0	-/-
	1752.5	23.3	-/-
10	1715.0	22.4	-/-
	1732.5	22.8	-/-
	1750.0	23.2	-/-
15	1717.5	22.5	-/-
	1732.5	22.8	-/-
	1747.5	23.2	
20	1720.0	22.4	23.4
	1732.5	22.8	24.0
	1745.0	23.3	24.3
Measurement uncertainty		± 3.0 dB	

Result: **Passed**

8.3.2 Frequency stability

Not performed!

8.3.3 Spurious emissions radiated

Description:

The following steps outline the procedure used to measure the radiated emissions from the mobile station. The site is constructed in accordance with ANSI C63.4:2009 requirements and is recognized by the FCC to be in compliance for a 3 and a 10 meter site. The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier that can be as high as 1755 MHz. This was rounded up to 20 GHz. The resolution bandwidth is set as outlined in Part 27.53. The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of the LTE band 4.

The final open field emission (here 10m semi-anechoic chamber listed by FCC) test procedure is as follows:

a) The test item was placed on a 0.8 meter high non-conductive stand at a 3 meter test distance from the receive antenna.
b) The antenna output was terminated in a 50 ohm load (if possible).
c) A double ridged wave guide antenna was placed on an adjustable height antenna mast 3 meters from the test item for emission measurements.
d) Detected emissions were maximized at each frequency by rotating the test item and adjusting the receive antenna height and polarization. The maximum meter reading was recorded. The radiated emission measurements of the harmonics of the transmit frequency through the 10th harmonic were measured with peak detector and 1 MHz bandwidth. If the harmonic could not be detected above the noise floor, the ambient level was recorded. The equivalent power into a dipole antenna was calculated from the field intensity levels measured at 3 meters.
e) Now each detected emissions were substituted by the substitution method, in accordance with the TIA/EIA 603.

Measurement:

Measurement parameters	
Detector:	Peak
Sweep time:	2 sec.
Video bandwidth:	Below 1 GHz: 100 kHz Above 1 GHz: 1 MHz
Resolution bandwidth:	Below 1 GHz: 100 kHz Above 1 GHz: 1 MHz
Span:	100 MHz Steps
Trace-Mode:	Max Hold

Limits:

FCC	
CFR Part 27.53(g) CFR Part 2.1053	
Spurious Emissions Radiated	
Attenuation ≥ 43 + 10log(P) (P, Power in Watts)	
-13 dBm	

Results:

Radiated emissions measurements were made only at the upper, center, and lower carrier frequencies of the LTE band 4 (1712.5 MHz, 1732.5 MHz and 1752.5 MHz). It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the LTE band 4 into any of the other blocks. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this.

As can be seen from this data, the emissions from the test item were within the specification limit.

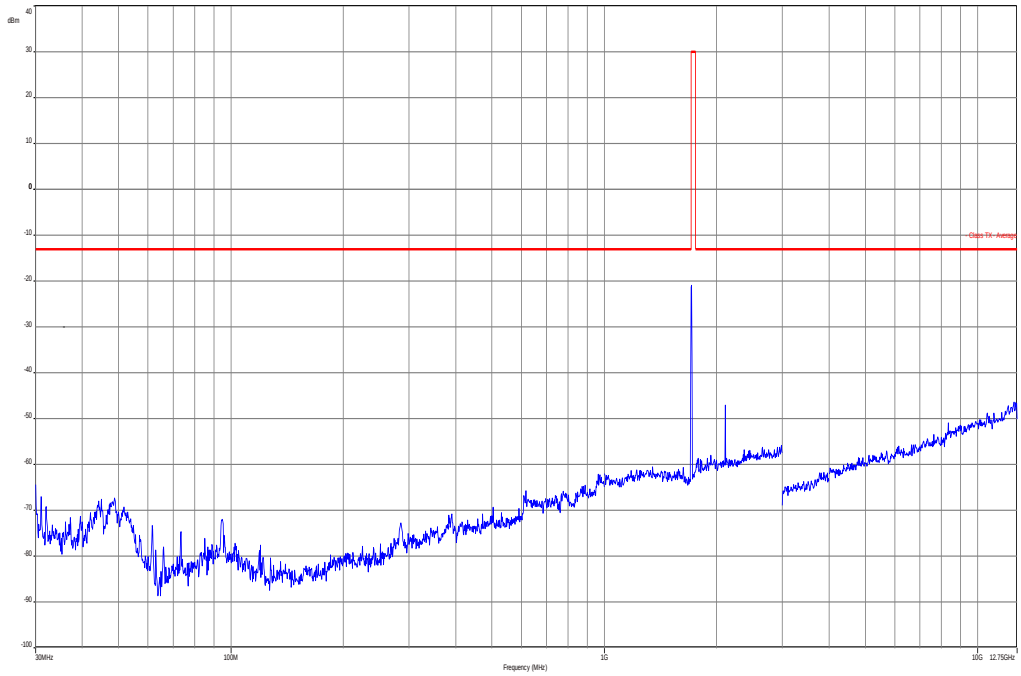
QPSK

Spurious Emission Level (dBm)					
Lowest channel		**Middle channel**		**Highest channel**	
Spurious emissions	Level [dBm]	Spurious emissions	Level [dBm]	Spurious emissions	Level [dBm]
No critical peaks detected!					
	-		-		-
	-		-		-
	-		-		-
Measurement uncertainty		± 3dB			

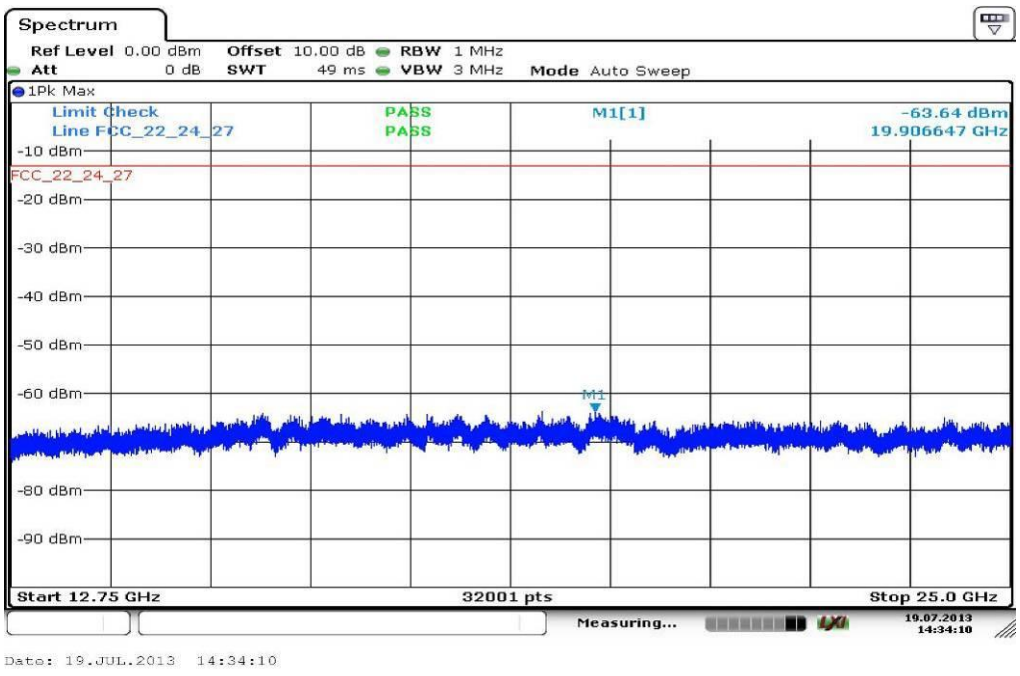
Result: **Passed**

QPSK with 1.4 MHz channel bandwidth with 6 RB

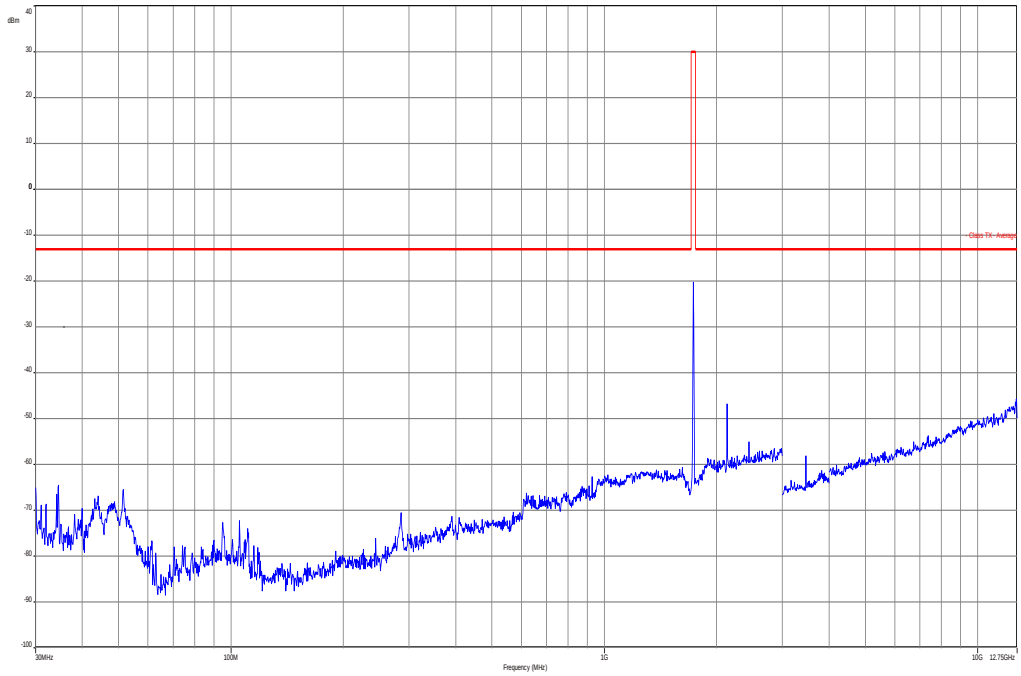
Plot 1: Lowest channel, 30 MHz to 12.75 GHz



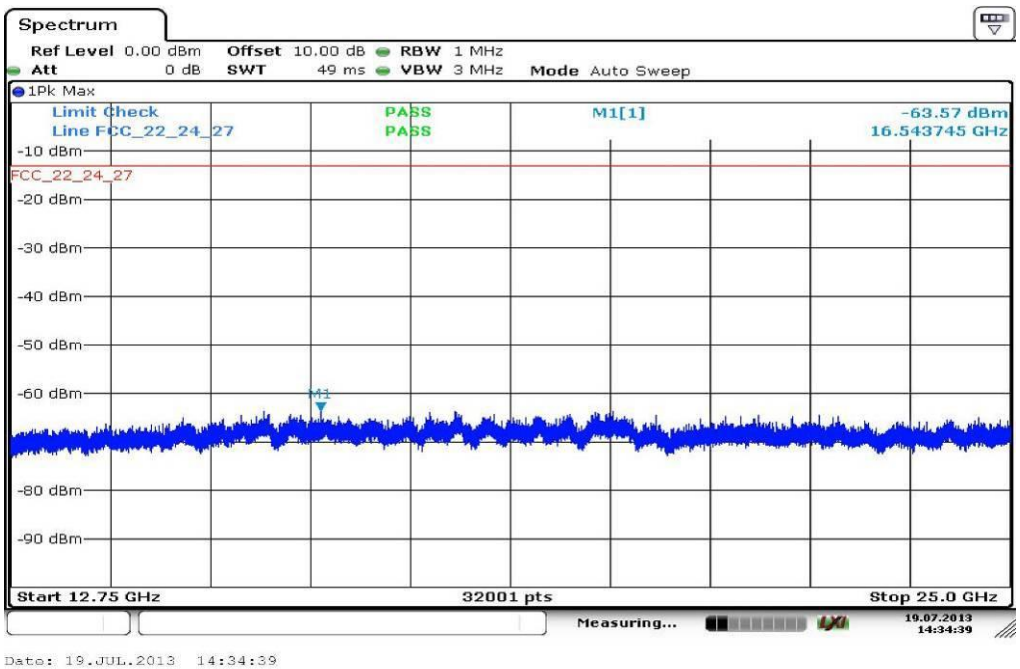
Plot 2: Lowest channel, 12 GHz to 25 GHz



Plot 3: Middle channel, 30 MHz to 12.75 GHz



Plot 4: Middle channel, 12 GHz to 25 GHz



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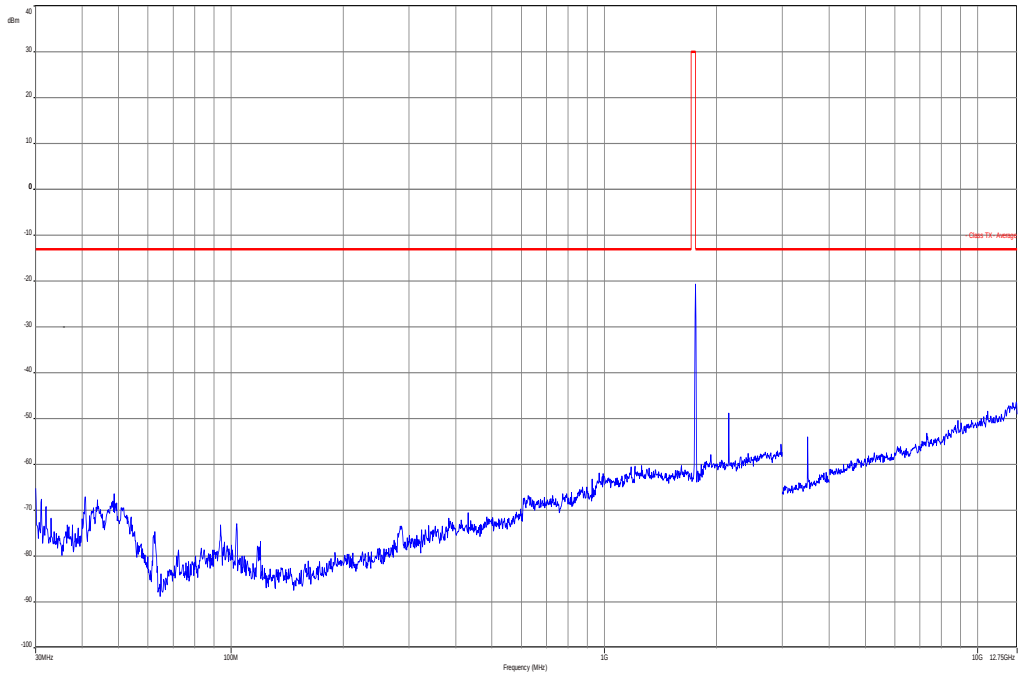
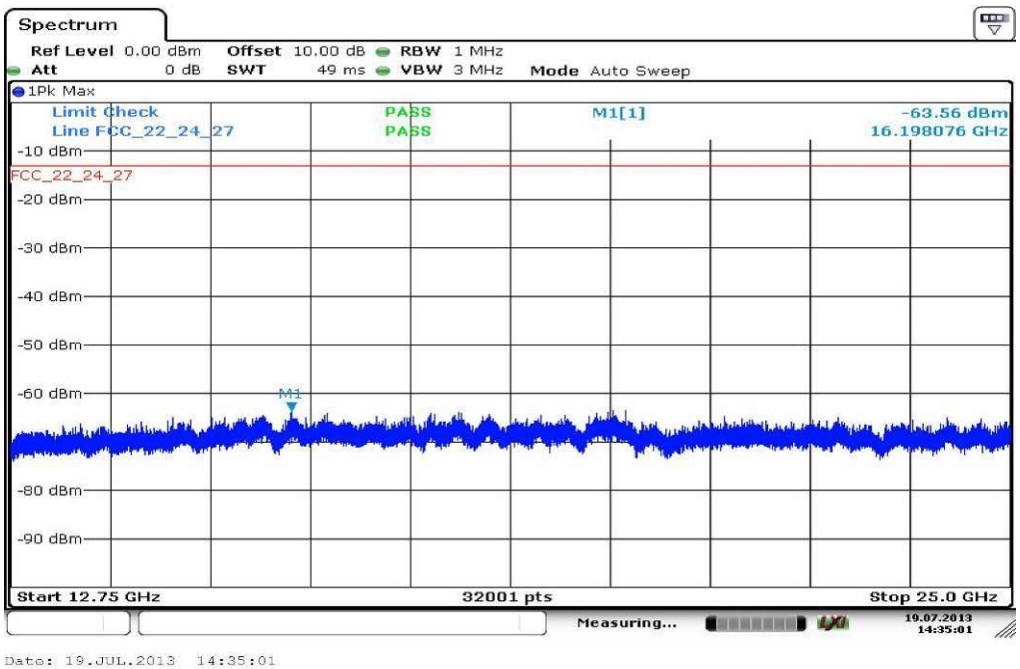
Plot 5: Highest channel, 30 MHz to 12.75 GHz

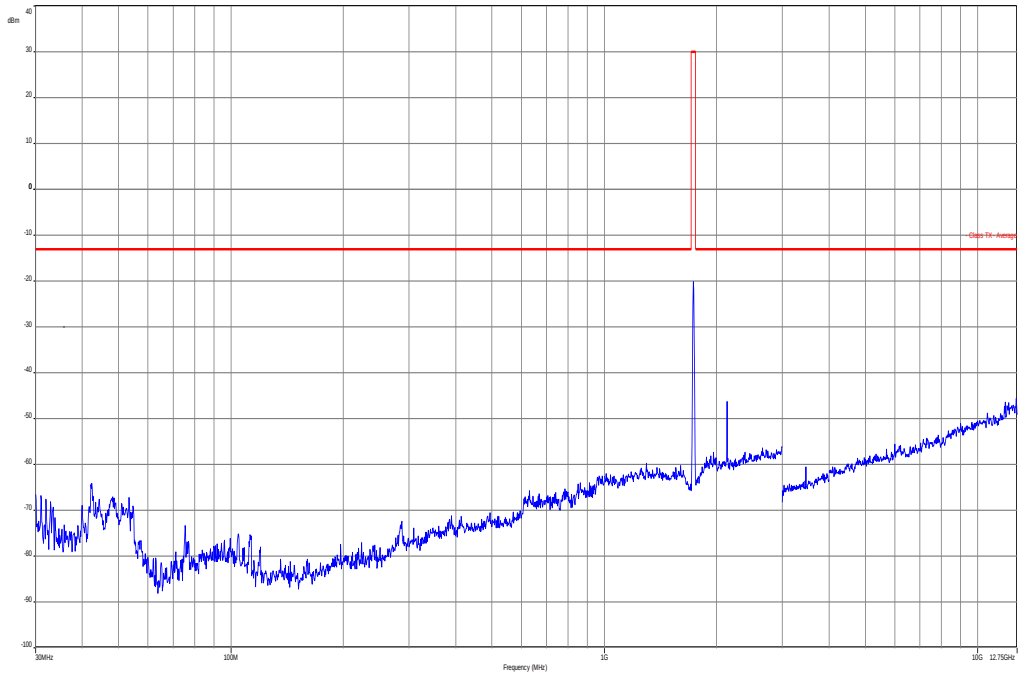


Plot 6: Highest channel, 12 GHz to 25 GHz

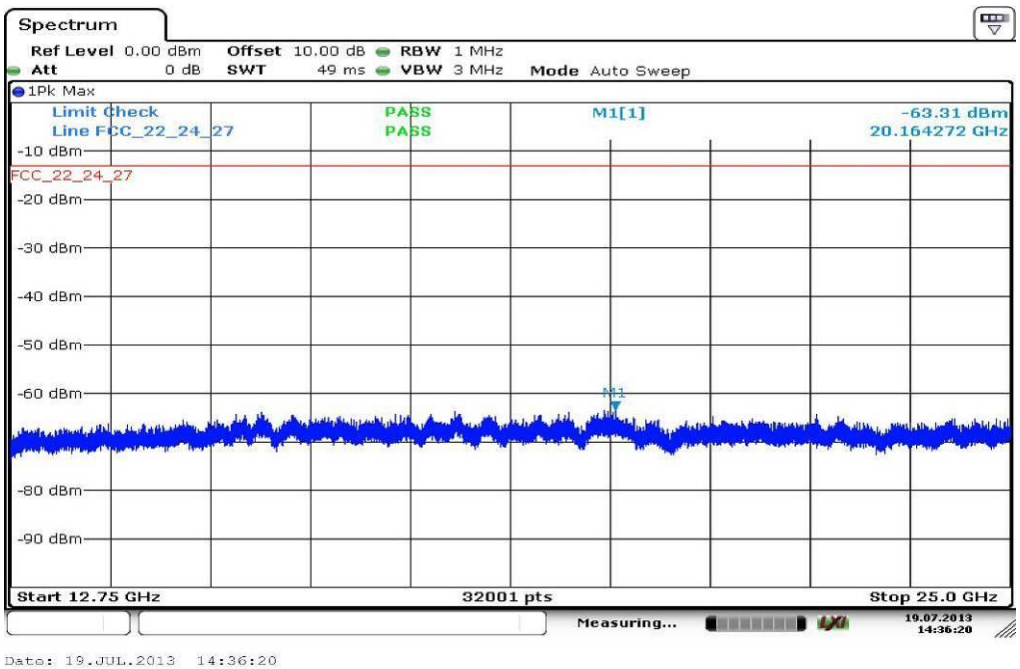


QPSK with 3 MHz channel bandwidth with 15 RB

Plot 1: Middle channel, 30 MHz to 12.75 GHz



Plot 2: Middle channel, 12 GHz to 25 GHz



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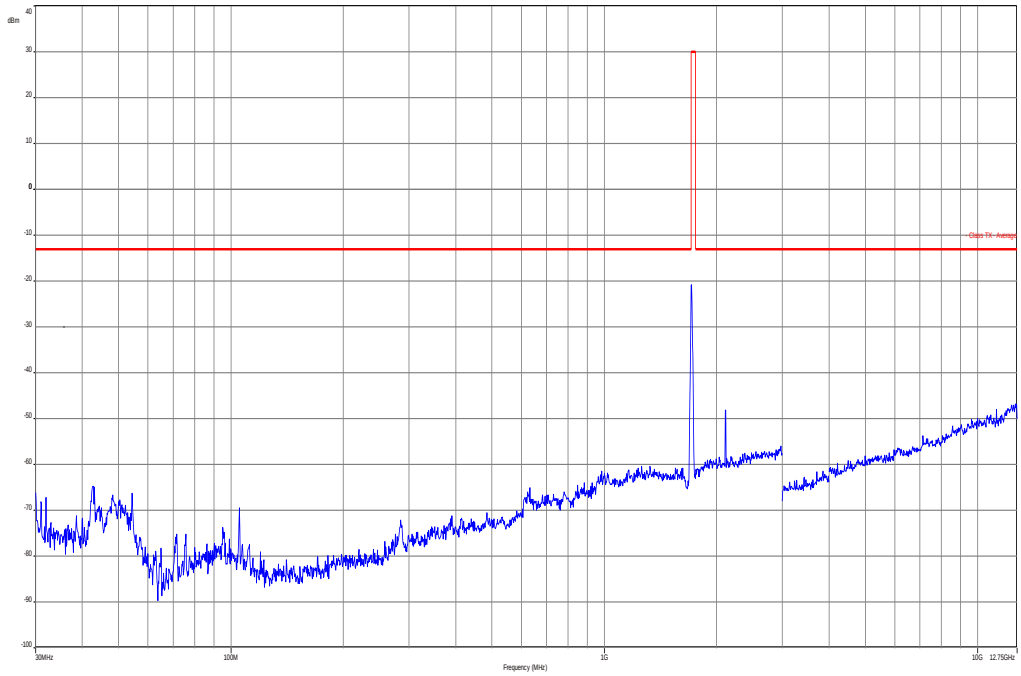
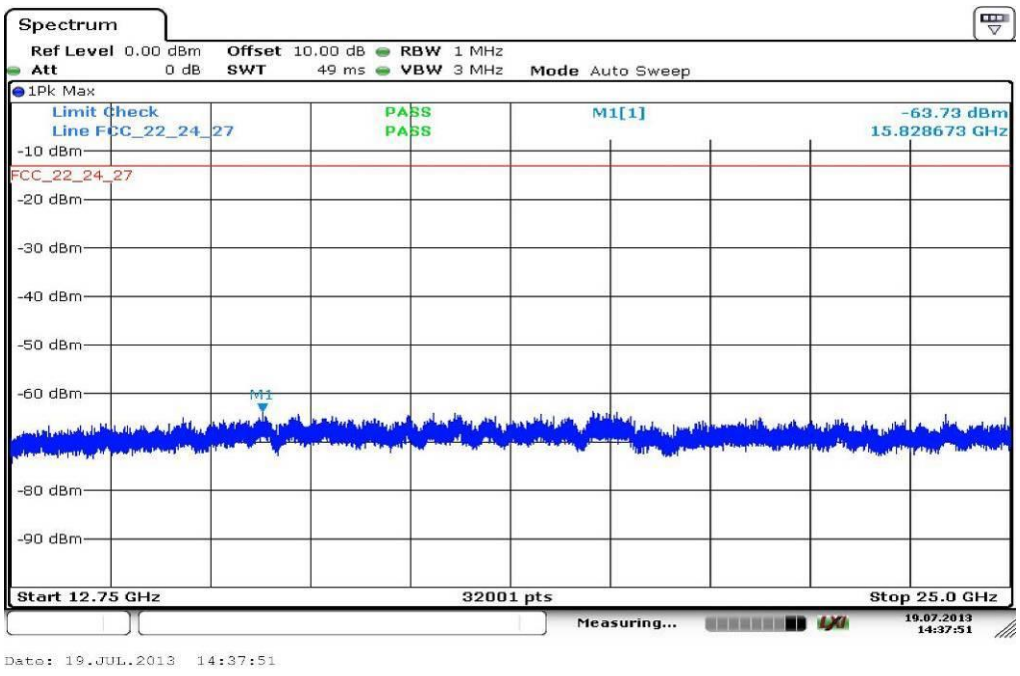
QPSK with 5 MHz channel bandwidth with 25 RB

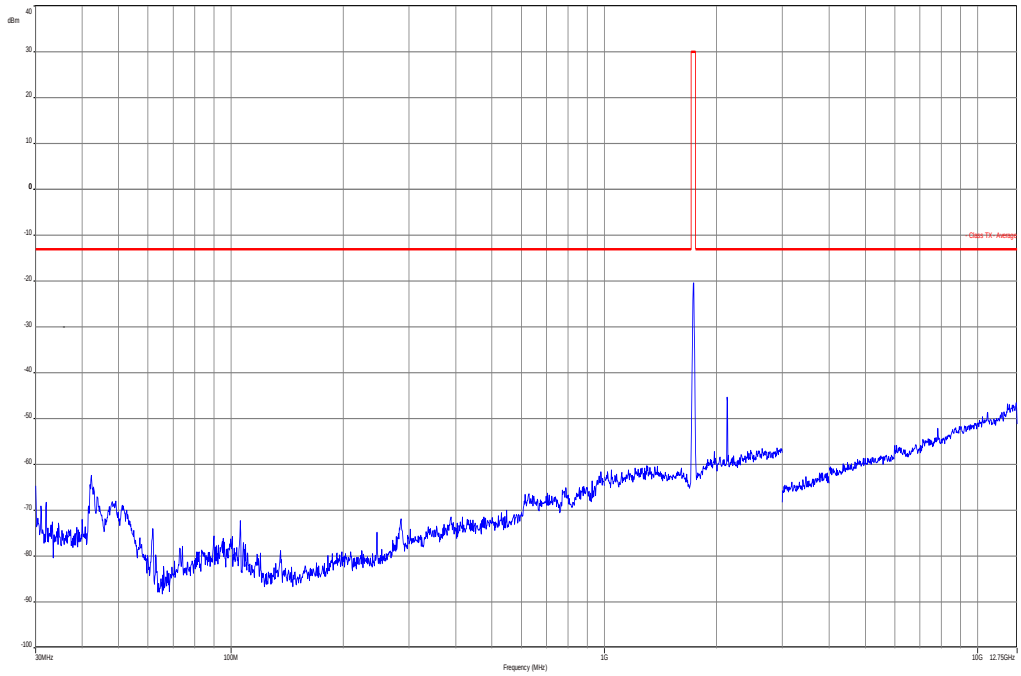
Plot 1: Lowest channel, 30 MHz to 12.75 GHz



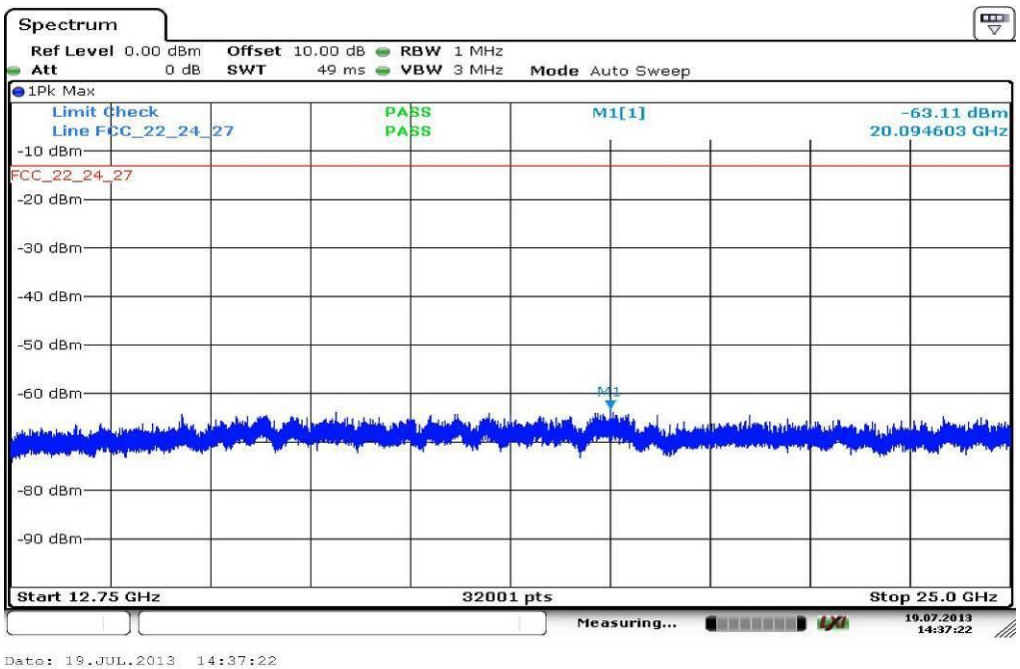
Plot 2: Lowest channel, 12 GHz to 25 GHz



Plot 3: Middle channel, 30 MHz to 12.75 GHz



Plot 4: Middle channel, 12 GHz to 25 GHz



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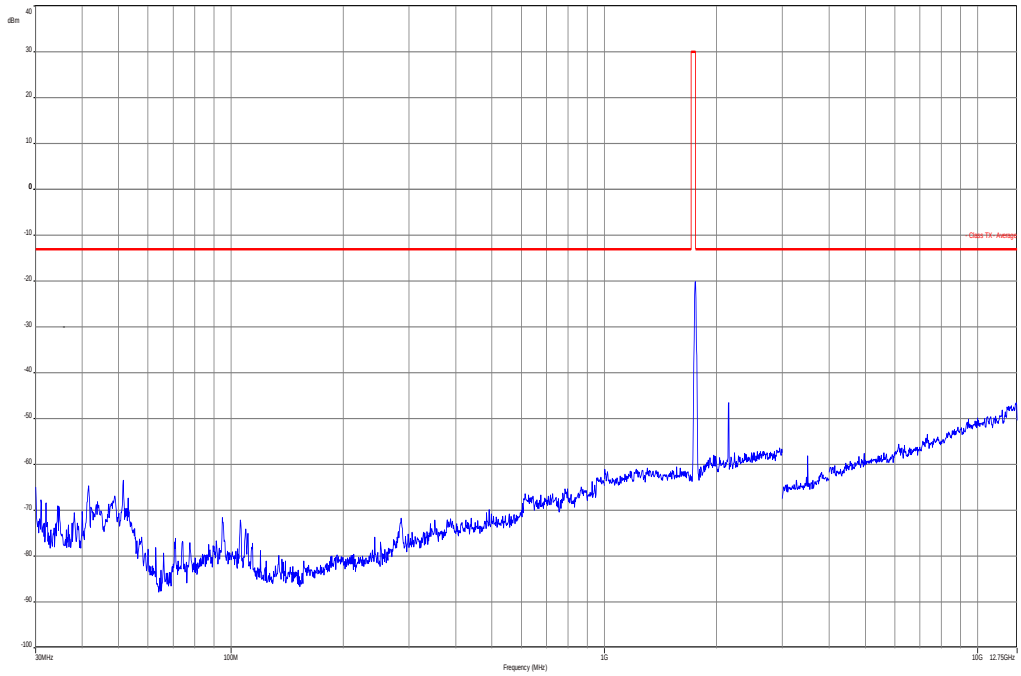
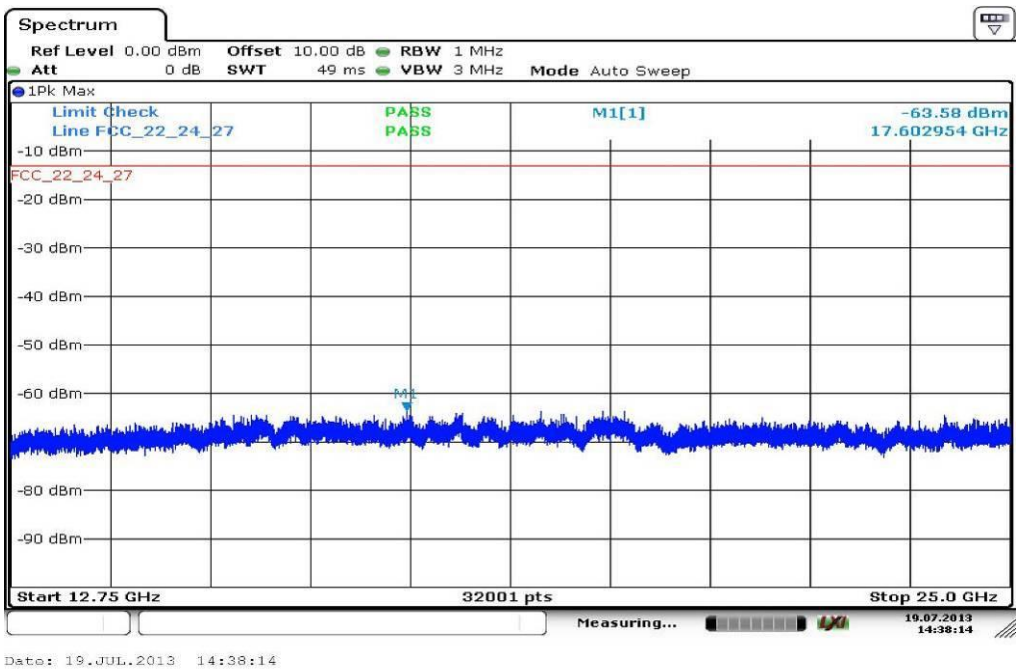
Plot 5: Highest channel, 30 MHz to 12.75 GHz

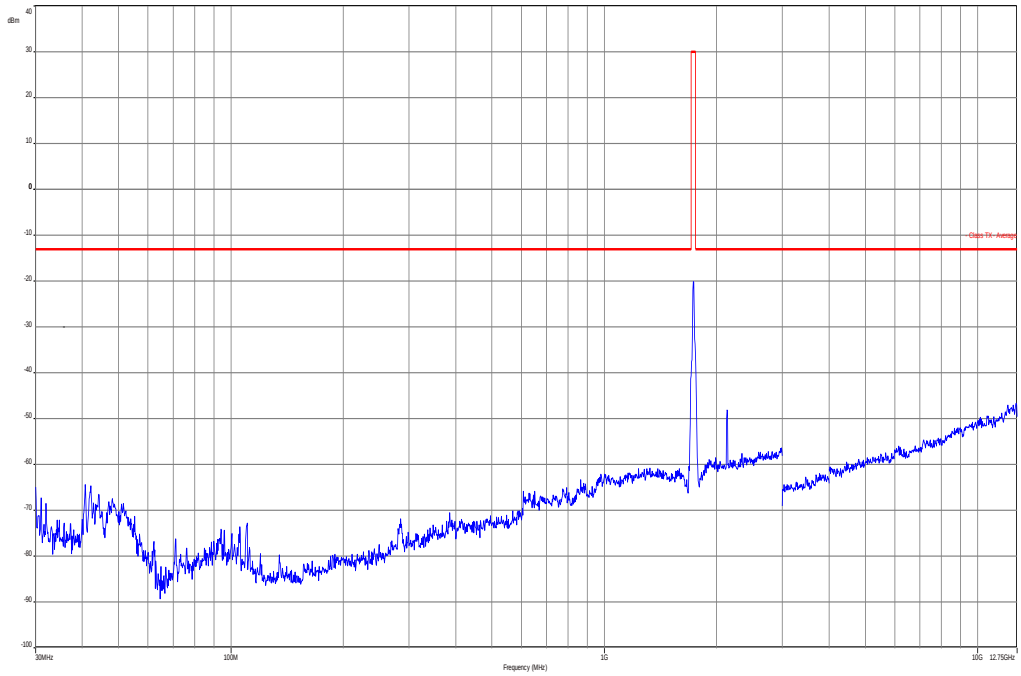


Plot 6: Highest channel, 12 GHz to 25 GHz

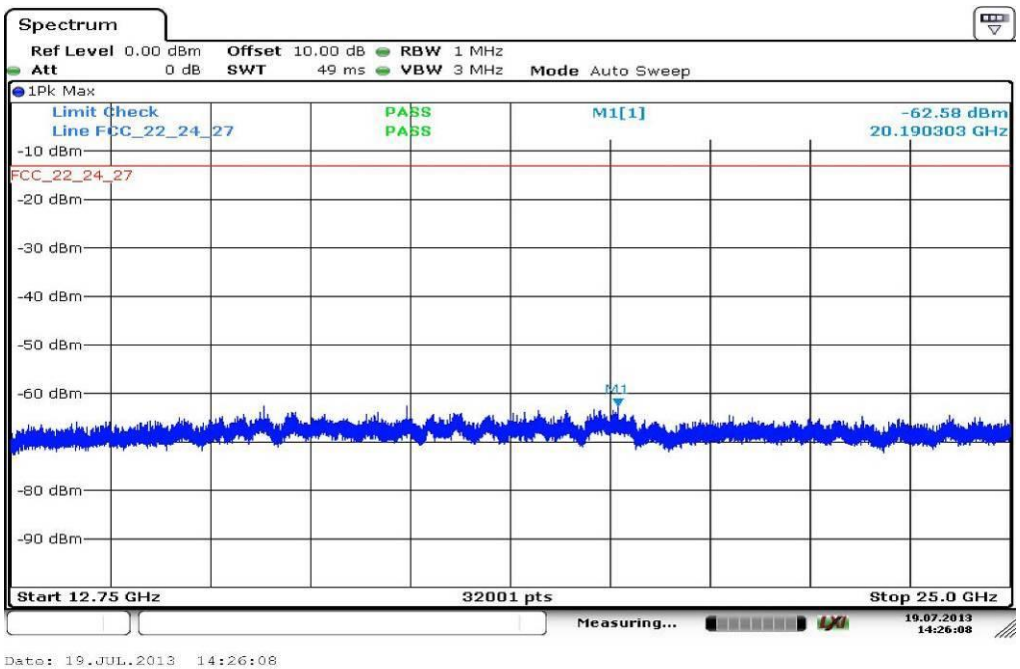


QPSK with 10 MHz channel bandwidth with 50 RB

Plot 1: Middle channel, 30 MHz to 12.75 GHz



Plot 2: Middle channel, 12 GHz to 25 GHz



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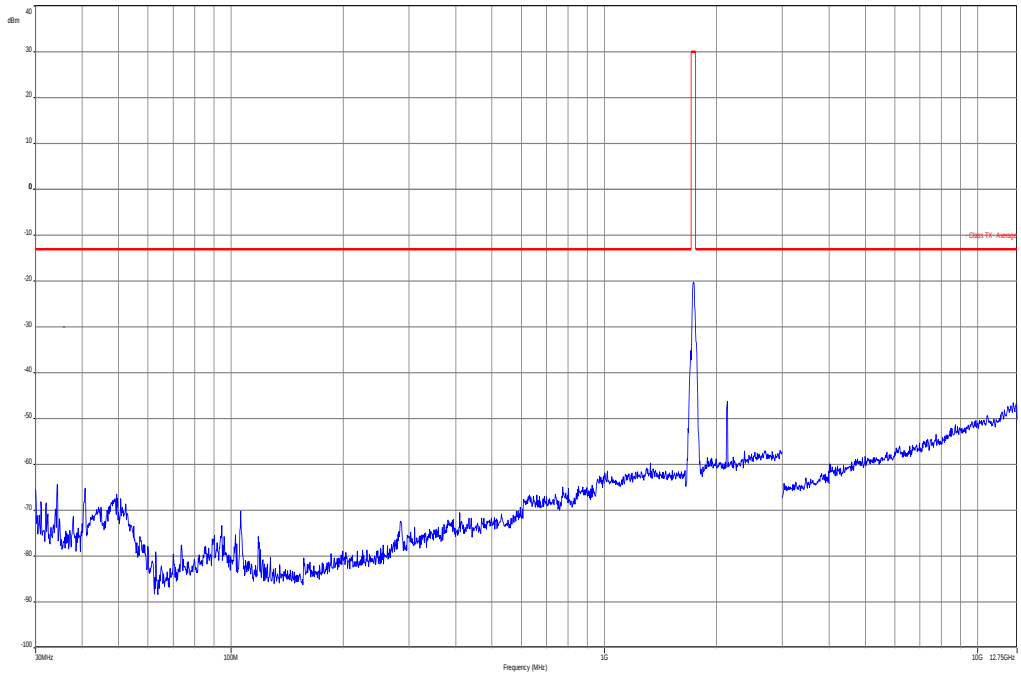
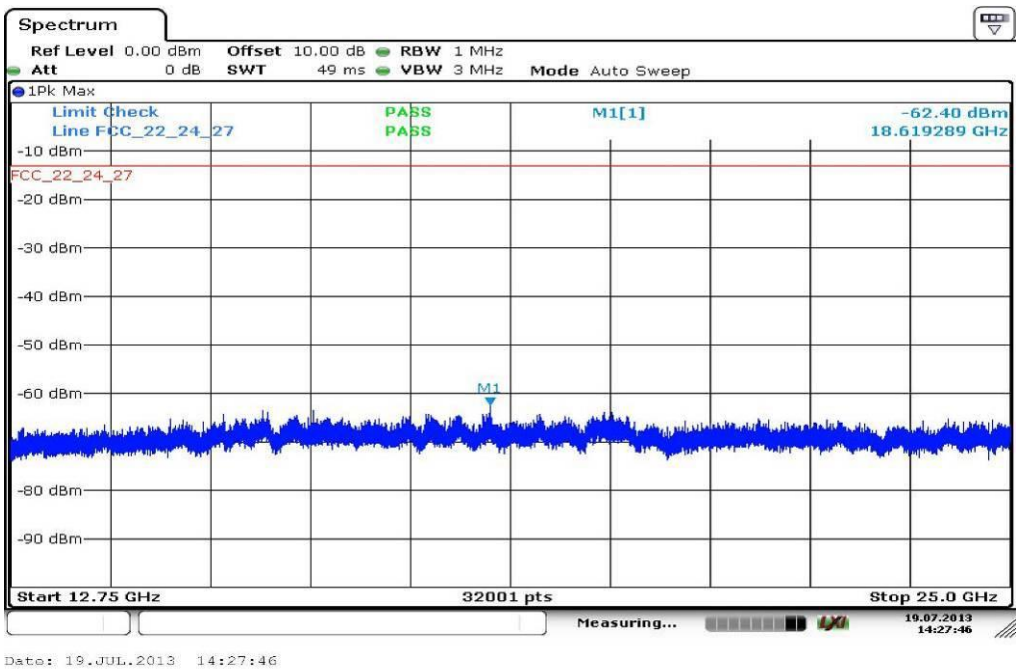
QPSK with 15 MHz channel bandwidth with 75 RB

Plot 1: Middle channel, 30 MHz to 12.75 GHz



Plot 2: Middle channel, 12 GHz to 25 GHz



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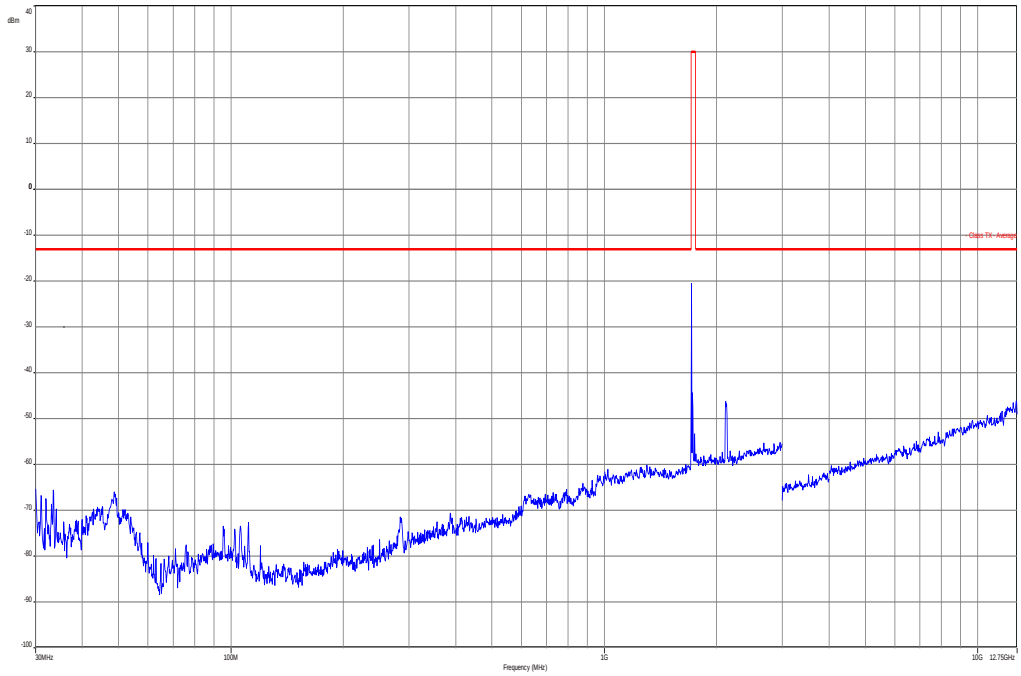
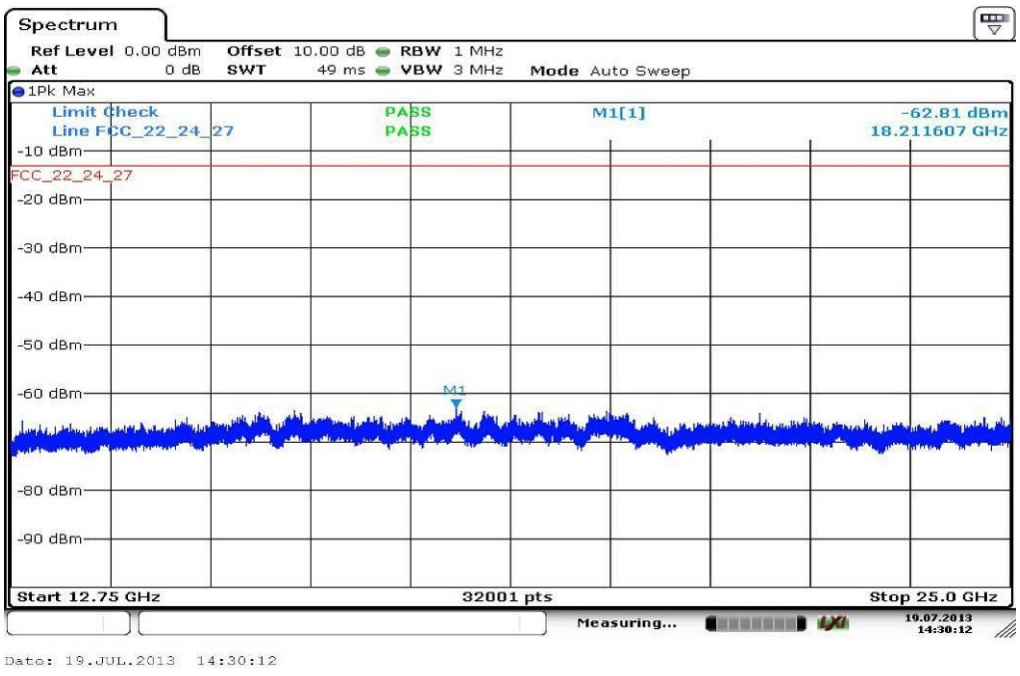
QPSK with 20 MHz channel bandwidth with 1 RB

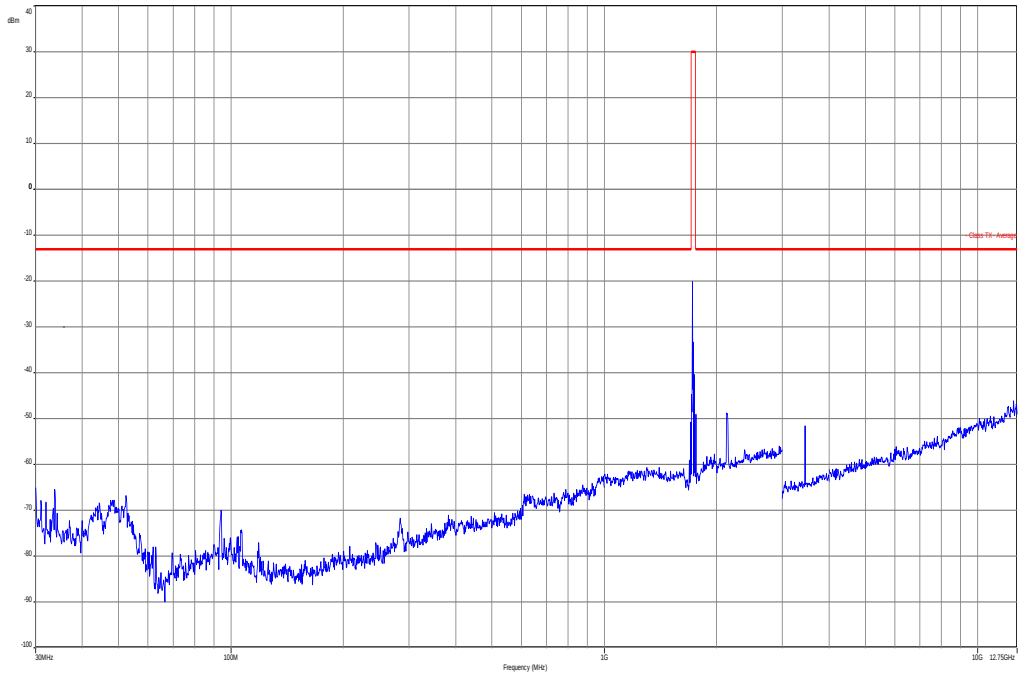
Plot 1: Lowest channel, 30 MHz to 12.75 GHz



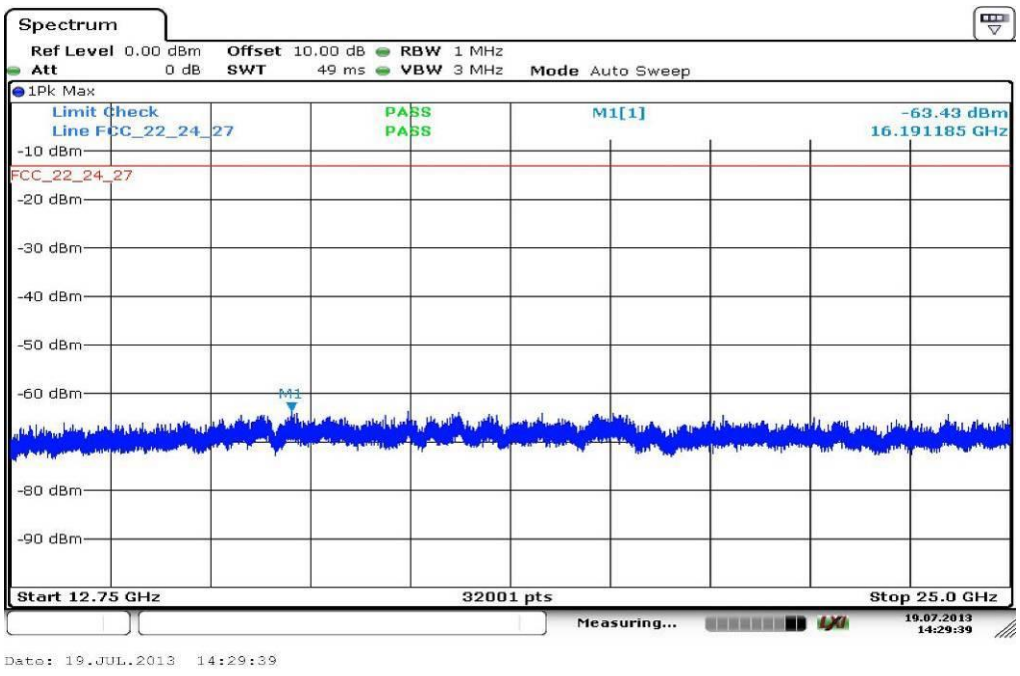
Plot 2: Lowest channel, 12 GHz to 25 GHz



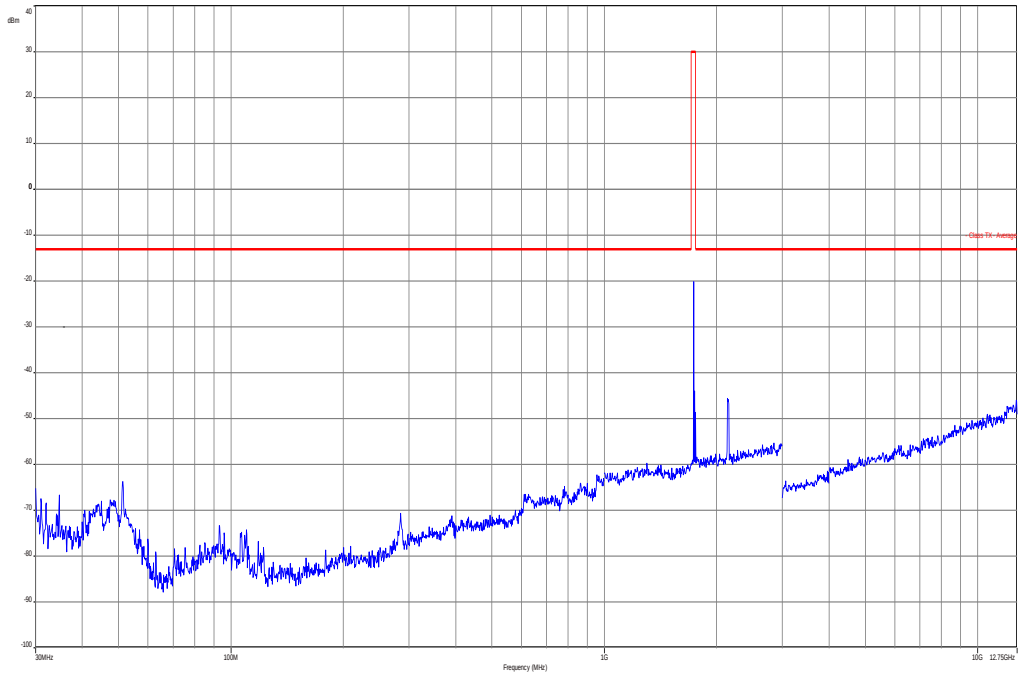
Plot 3: Middle channel, 30 MHz to 12.75 GHz



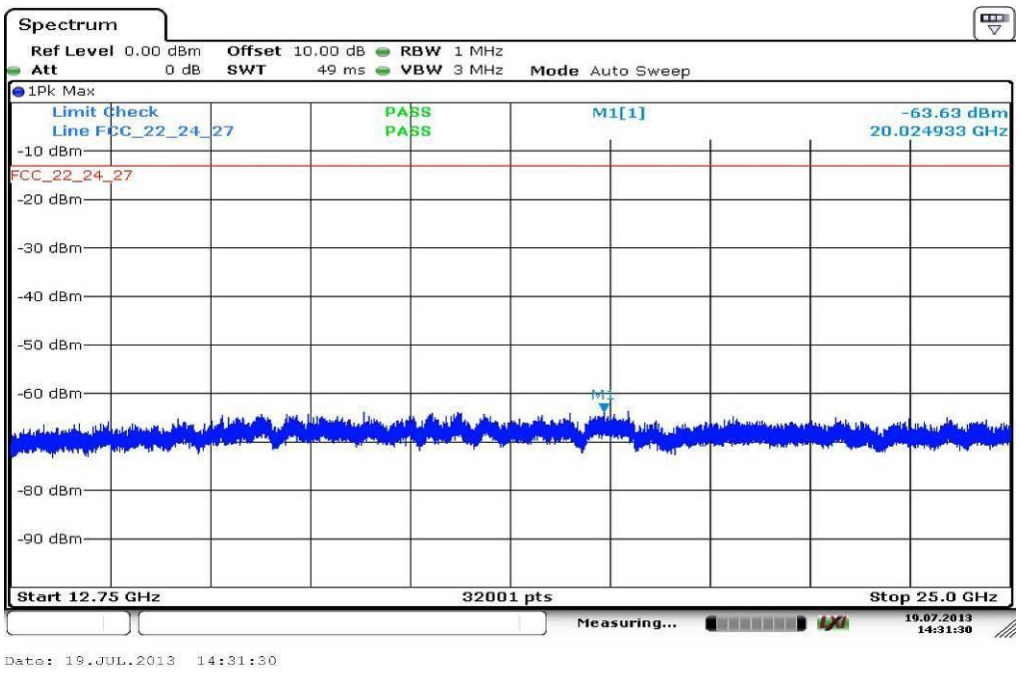
Plot 4: Middle channel, 12 GHz to 25 GHz



Plot 5: Highest channel, 30 MHz to 12.75 GHz

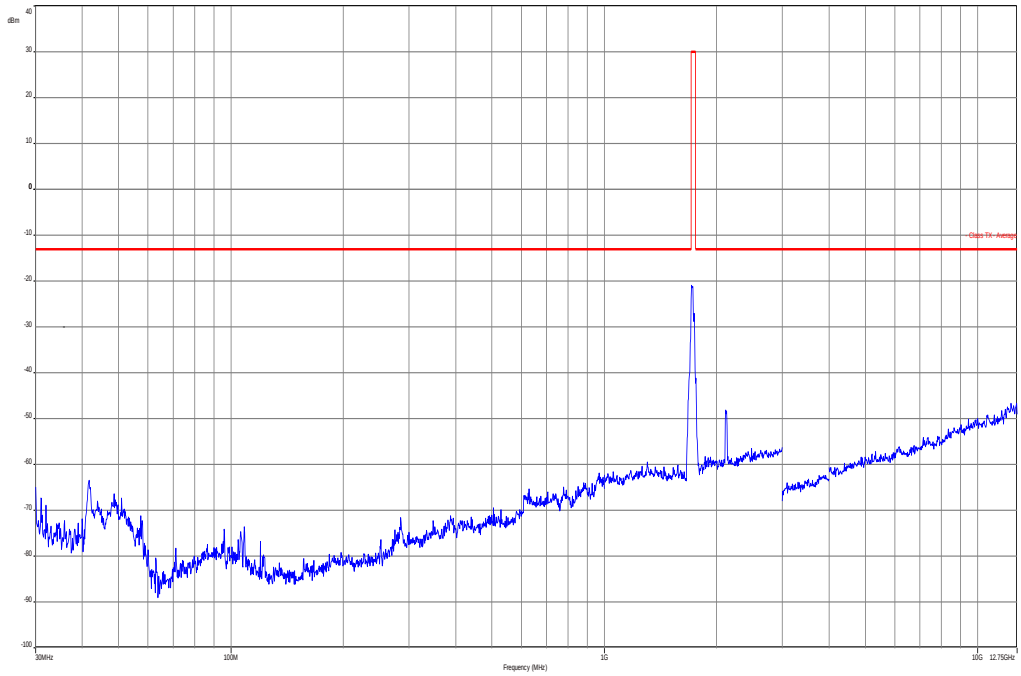


Plot 6: Highest channel, 12 GHz to 25 GHz

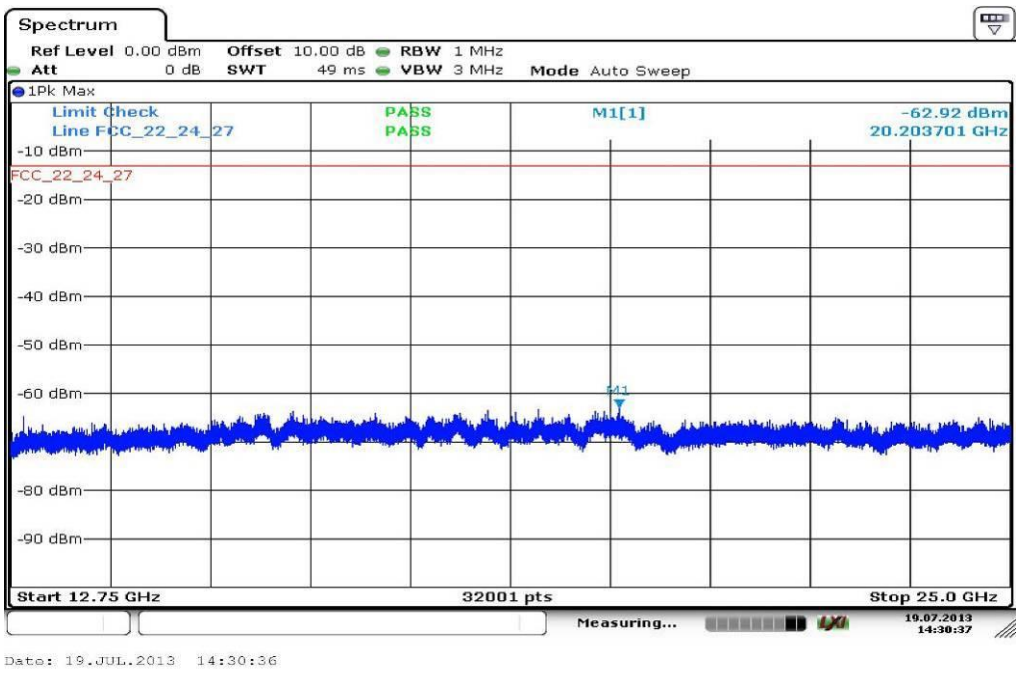


QPSK with 20 MHz channel bandwidth with 100 RB

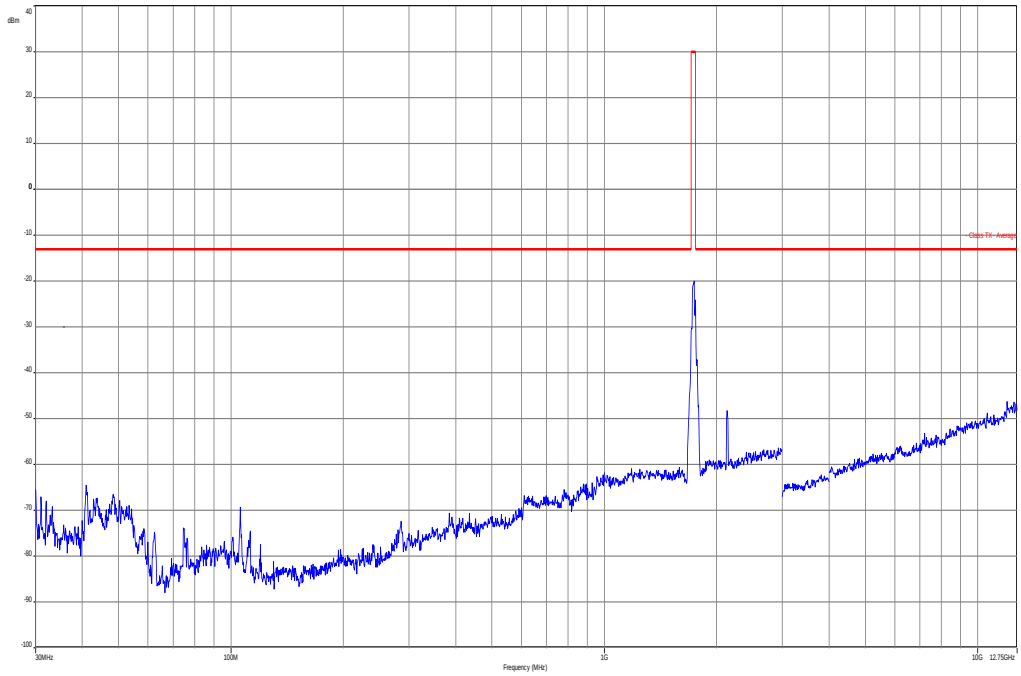
Plot 1: Lowest channel, 30 MHz to 12.75 GHz



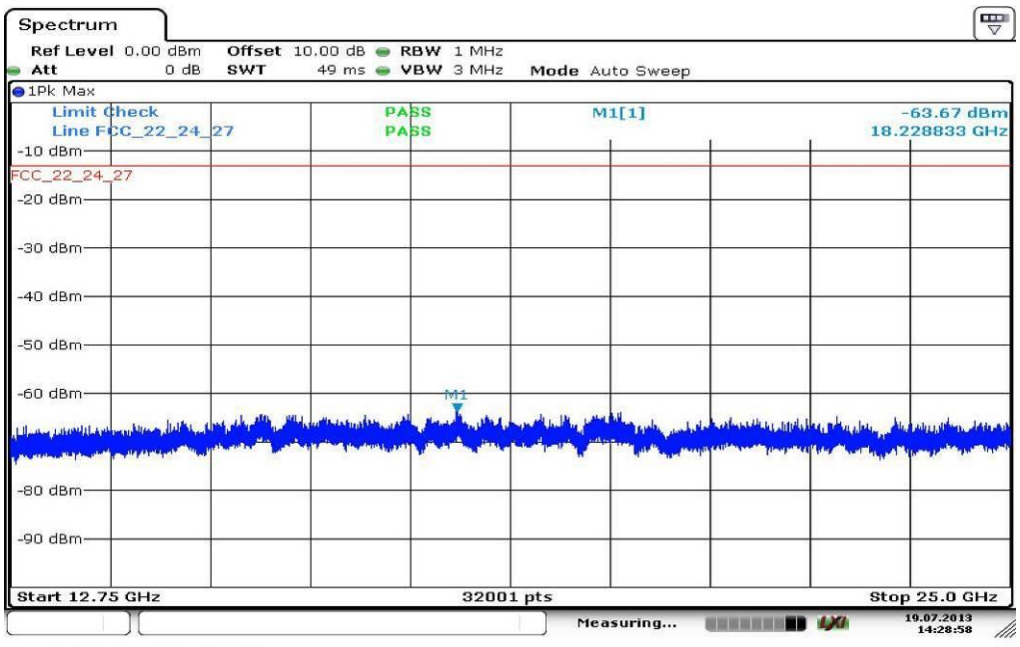
Plot 2: Lowest channel, 12 GHz to 25 GHz



Plot 3: Middle channel, 30 MHz to 12.75 GHz

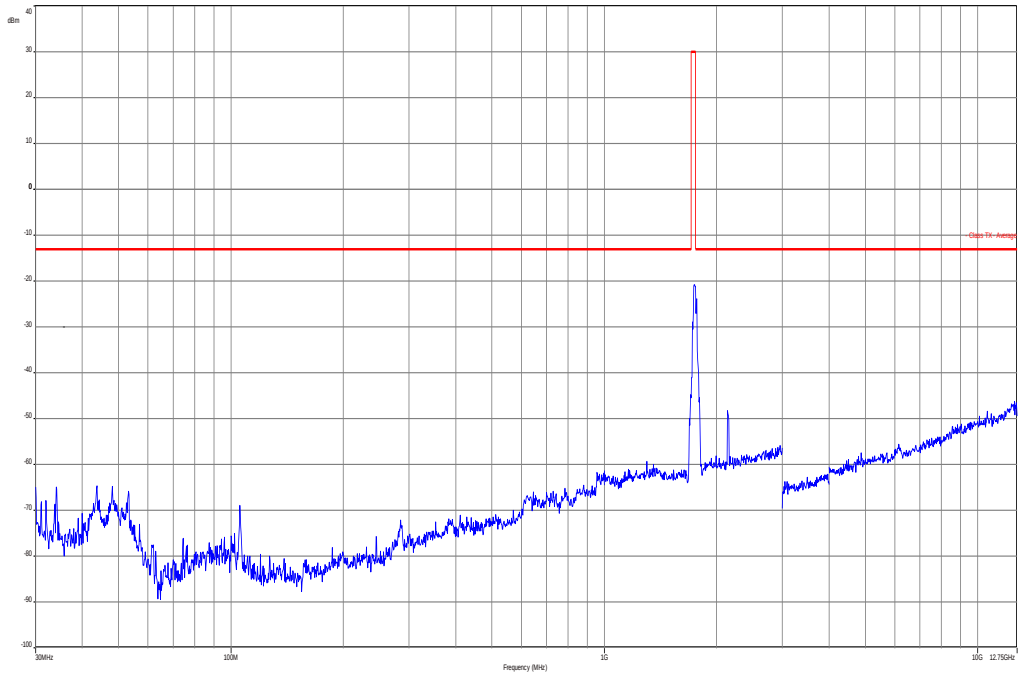


Plot 4: Middle channel, 12 GHz to 25 GHz

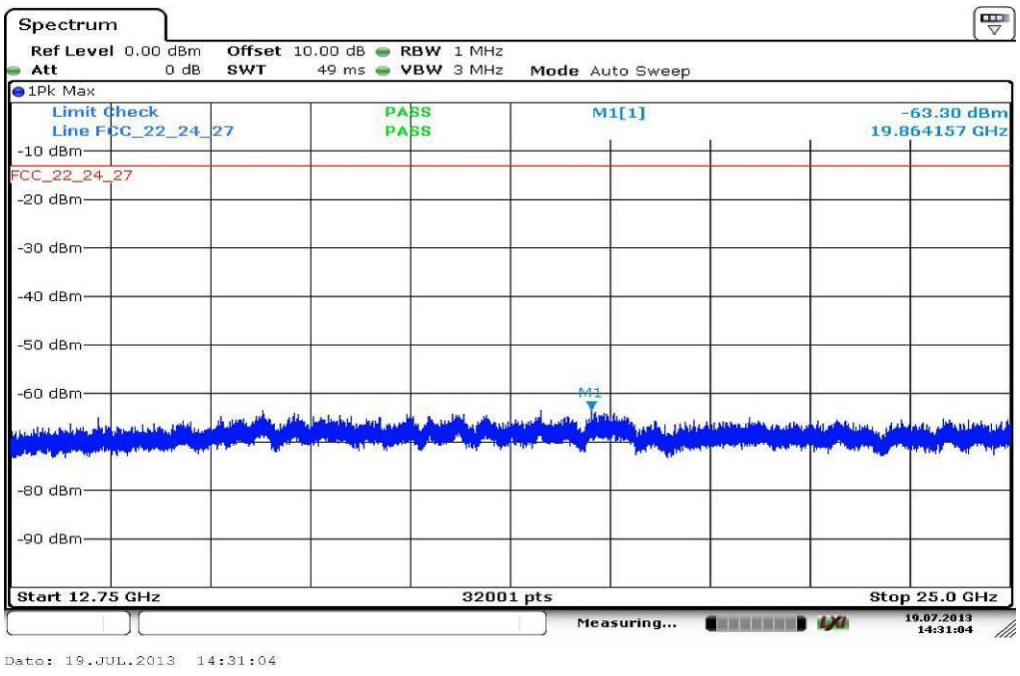


Date: 19.JUL.2013 14:28:58

Plot 5: Highest channel, 30 MHz to 12.75 GHz



Plot 6: Highest channel, 12 GHz to 25 GHz



8.3.4 Spurious emissions conducted

Not performed!

8.3.5 Block edge compliance

Not performed!

8.3.6 Occupied bandwidth

Not performed!

8.4 Results LTE – Band 13

The EUT was set to transmit the maximum power.

8.4.1 RF output power

Description:

This paragraph contains average power, peak output power and EIRP measurements for the mobile station. In all cases, the peak output power is within the required mask (this mask is specified in the JTC standards, TIA PN3389 Vol. 1 Chap 7, and is no FCC requirement).

Measurement:

The mobile was set up for the maximum output power with pseudo random data modulation.

To determine the Peak-To-Average Power Ratio (PAPR) the measurement was performed with the Power Complementary Cumulative Distribution Function (CCDF).

Measurement parameters	
Detector:	Peak and RMS (Power in Burst)
Sweep time:	Auto
Video bandwidth:	Depends on Channel Bandwidth
Resolution bandwidth:	Depends on Channel Bandwidth
Span:	Zero Span
Trace-Mode:	Max Hold

Limits:

FCC	
CFR Part 27.53 CFR Part 2.1046	
Nominal Peak Output Power	
+35.00 dBm In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.	

Results:

Output Power (radiated)			
Bandwidth (MHz)	**Frequency (MHz)**	**Average Output Power (dBm) QPSK - #RB=100%**	**Average Output Power (dBm) QPSK - #RB=1**
5	779.5	20.8	-/-
	782.0	21.4	-/-
	784.5	21.4	-/-
10	782.0	20.7	22.6
Measurement uncertainty		± 3.0 dB	

Result: **Passed**

8.4.2 Frequency stability

Not performed!

8.4.3 Spurious emissions radiated

Description:

The following steps outline the procedure used to measure the radiated emissions from the mobile station. The site is constructed in accordance with ANSI C63.4:2009 requirements and is recognized by the FCC to be in compliance for a 3 and a 10 meter site. The spectrum was scanned from 30 MHz up to 12.75 GHz. The resolution bandwidth is set as outlined in Part 27.53. The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of the LTE band 13.

The final open field emission (here 10m semi-anechoic chamber listed by FCC) test procedure is as follows:

a) The test item was placed on a 0.8 meter high non-conductive stand at a 3 meter test distance from the receive antenna.
b) The antenna output was terminated in a 50 ohm load (if possible).
c) A double ridged wave guide antenna was placed on an adjustable height antenna mast 3 meters from the test item for emission measurements.
d) Detected emissions were maximized at each frequency by rotating the test item and adjusting the receive antenna height and polarization. The maximum meter reading was recorded. The radiated emission measurements of the harmonics of the transmit frequency through the 10th harmonic were measured with peak detector and 1 MHz bandwidth. If the harmonic could not be detected above the noise floor, the ambient level was recorded. The equivalent power into a dipole antenna was calculated from the field intensity levels measured at 3 meters.
e) Now each detected emissions were substituted by the substitution method, in accordance with the TIA/EIA 603.

Measurement:

Measurement parameters	
Detector:	Peak
Sweep time:	2 s
Video bandwidth:	Below 1 GHz: 100 kHz Above 1 GHz: 1 MHz
Resolution bandwidth:	Below 1 GHz: 100 kHz Above 1 GHz: 1 MHz
Span:	100 MHz Steps
Trace-Mode:	Max Hold

Limits:

FCC	
CFR Part 27.53(g) CFR Part 2.1053	
Spurious Emissions Radiated	
Attenuation ≥ 43 + 10log(P) (P, Power in Watts)	
-13 dBm	

Results:

Radiated emissions measurements were made only at the upper, center, and lower carrier frequencies of the LTE band 13 (779.5 MHz, 782.0 MHz and 784.5 MHz). It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the LTE band 13 into any of the other blocks. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this.

As can be seen from this data, the emissions from the test item were within the specification limit.

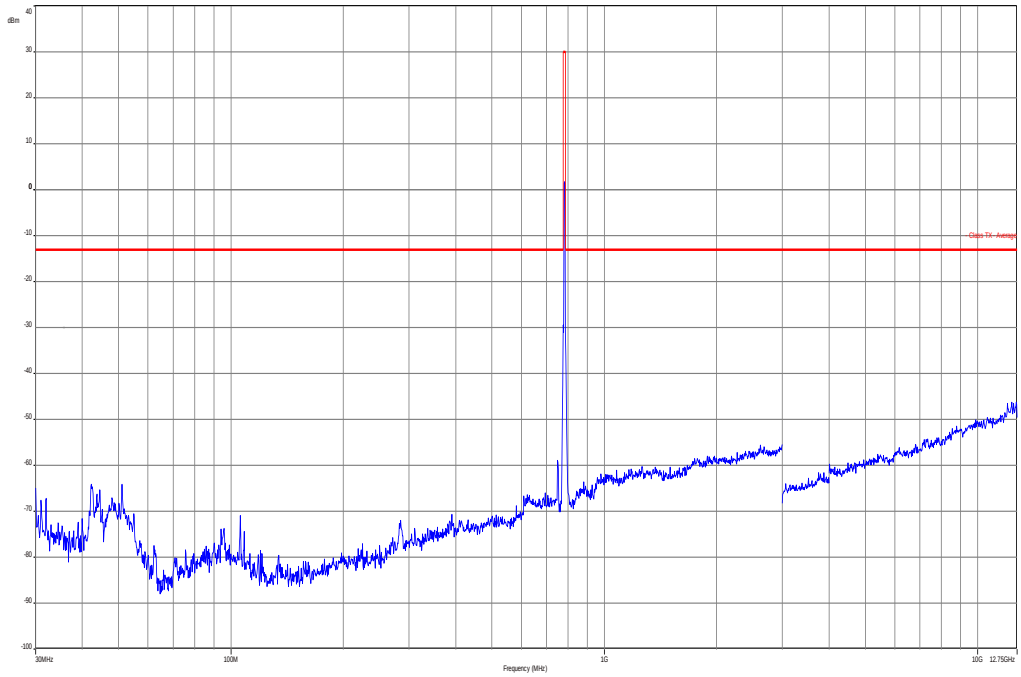
QPSK

Spurious Emission Level (dBm)					
Lowest channel		**Middle channel**		**Highest channel**	
Spurious emissions	Level [dBm]	Spurious emissions	Level [dBm]	Spurious emissions	Level [dBm]
No critical peaks detected!					
	-		-		-
	-		-		-
	-		-		-
	-		-		-
Measurement uncertainty		± 3dB			

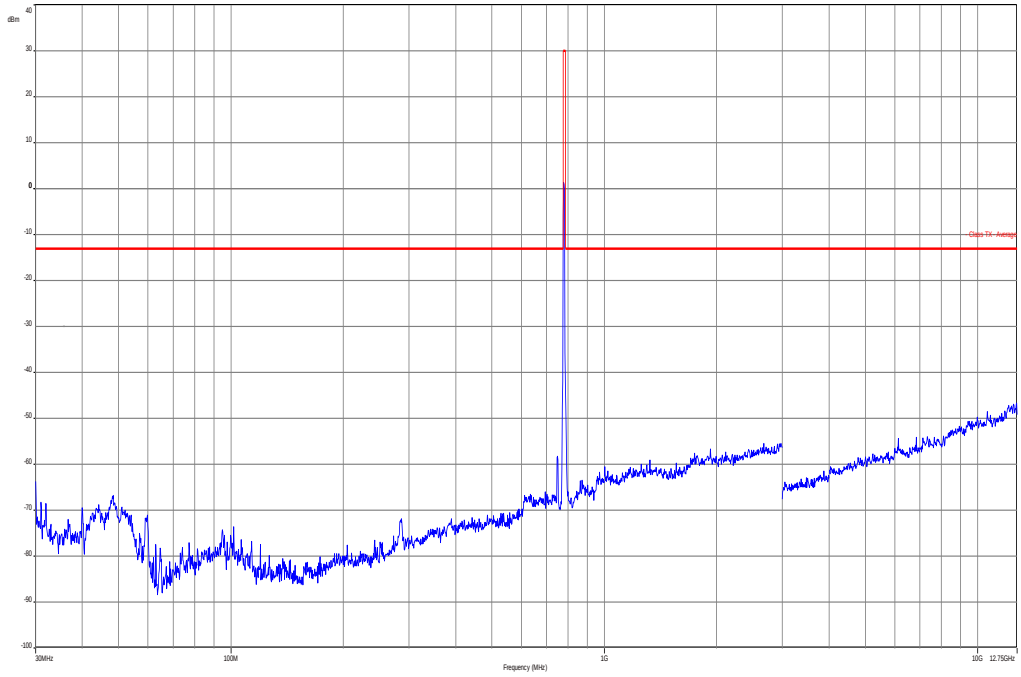
Result: **Passed**

QPSK with 5 MHz channel bandwidth with 25 RB

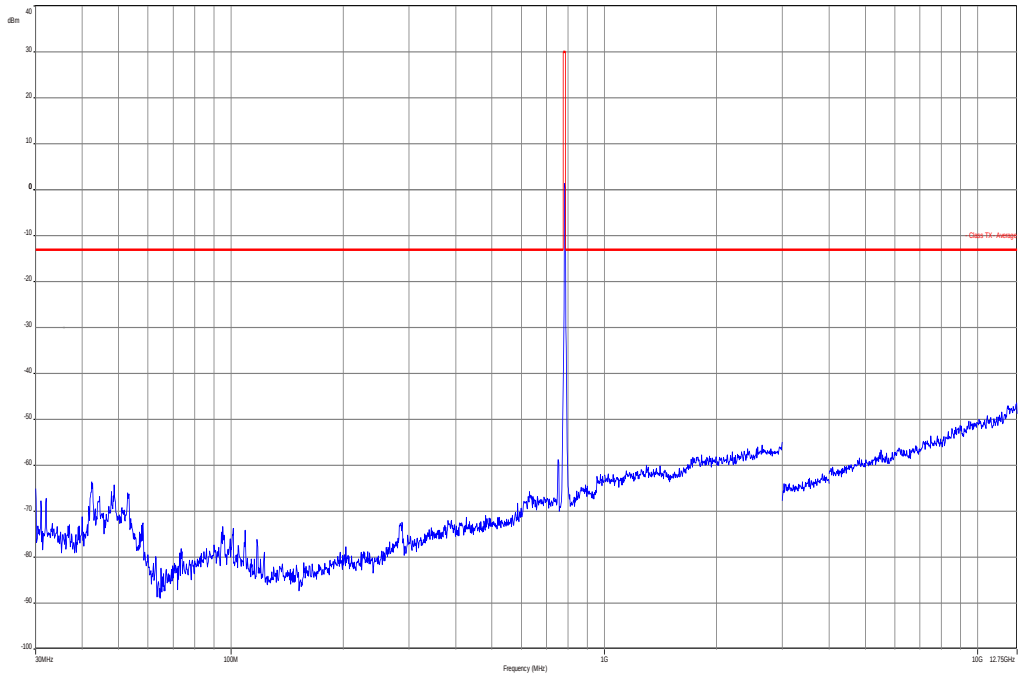
Plot 1: Lowest channel, 30 MHz to 12.75 GHz



Plot 2: Middle channel, 30 MHz to 12.75 GHz

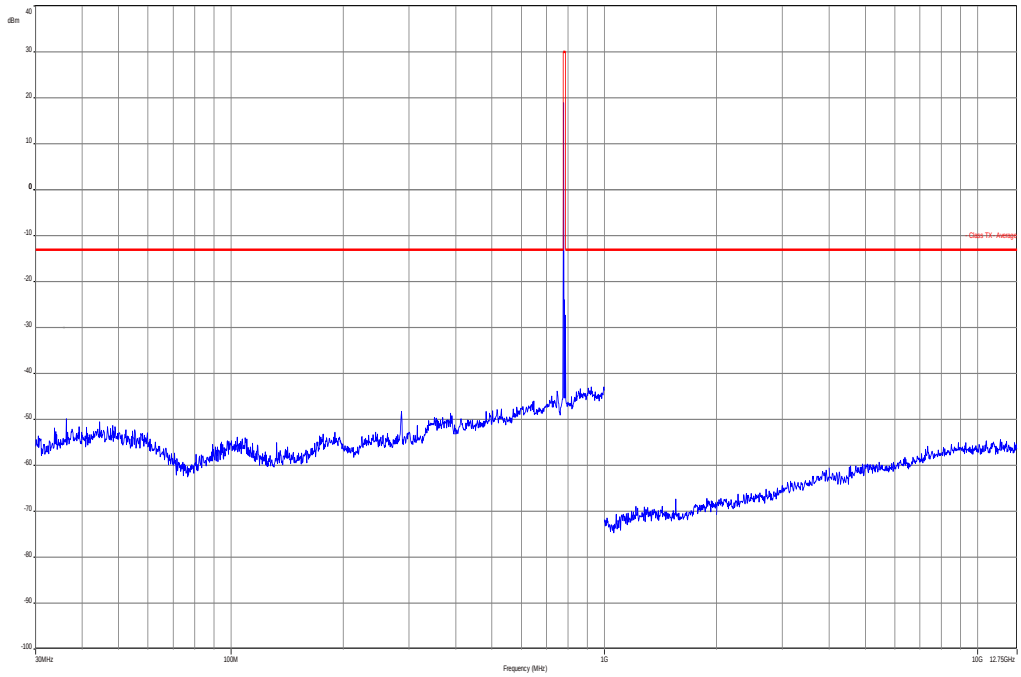


Plot 3: Highest channel, 30 MHz to 12.75 GHz



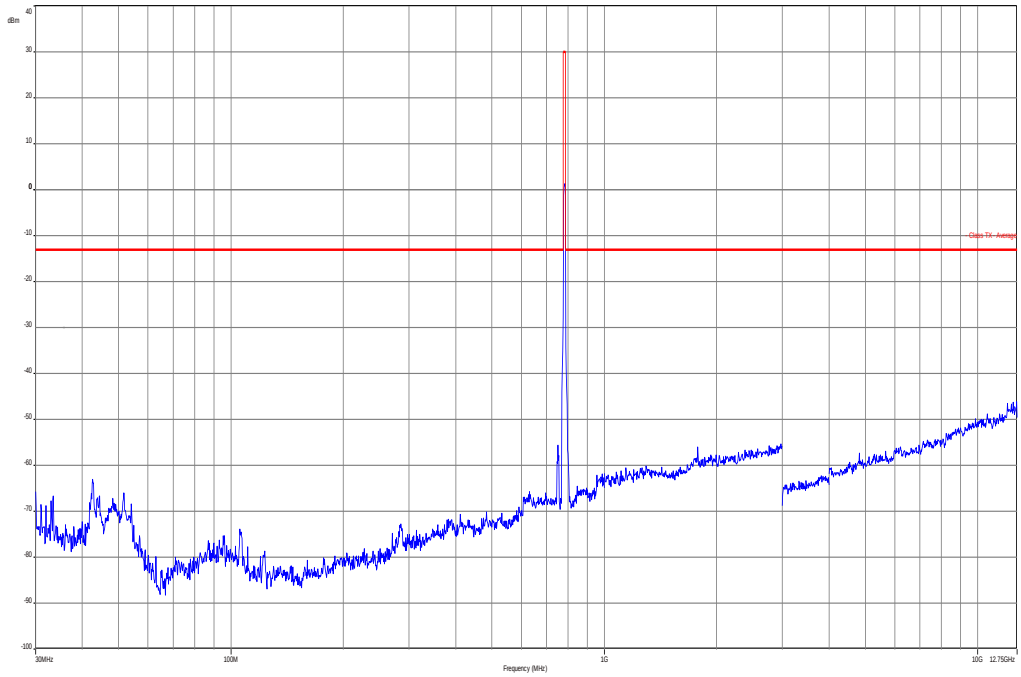
QPSK with 10 MHz channel bandwidth with 1 RB

Plot 1: Middle channel, 30 MHz to 12.75 GHz



QPSK with 10 MHz channel bandwidth with 50 RB

Plot 1: Middle channel, 30 MHz to 12.75 GHz



8.4.4 Spurious emissions conducted

Not performed!

8.4.5 Block edge compliance

Not performed!

8.4.6 Occupied bandwidth

Not performed!

9 Test equipment and ancillaries used for tests

Typically, the calibrations of the test apparatus are commissioned to and performed by an accredited calibration laboratory. The calibration intervals are determined in accordance with the DIN EN ISO/IEC 17025. In addition to the external calibrations, the laboratory executes comparison measurements with other calibrated test systems or effective verifications. Weekly chamber inspections and range calibrations are performed. Where possible, rf-generating and signalling equipment as well as measuring receivers and analyzers are connected to an external high-precision 10 MHz reference (GPS-based or rubidium frequency standard).

In order to simplify the identification of the equipment used at some special tests, some items of test equipment and ancillaries can be provided with an identifier or number in the equipment list below (Labor/Item).

No.	Lab / Item	Equipment	Type	Manufact.	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
1	n. a.	Wideband Radio Communication Tester	CMW500	R&S	102375	300004187 _0	k	18.01.2013	18.01.2015
2	n. a.	Signal Analyzer 40 GHz	FSV40	R&S	101042	300004517	k	22.10.2012	22.10.2013
3	11b	Microwave System Amplifier, 0.5-26.5 GHz	83017A	HP Meßtechnik	00419	300002268	ev		
4	A025	Std. Gain Horn Antenna 12.4 to 18.0 GHz	639	Narda		300000786	ne		
5	A028	Std. Gain Horn Antenna 18.0 to 26.5 GHz	638	Narda		300002440	ne		
6	n. a.	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	vlKl!	08.05.2013	08.05.2015
7	n. a.	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996	ev		
8	n. a.	Switch / Control Unit	3488A	HP Meßtechnik	*	300000199	ne		
9	n. a.	Switch / Control Unit	3488A	HP Meßtechnik	2719A15013	300001156	ne		
10	n. a.	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997	ne		
11	n. a.	Amplifier	js42-00502650-28-5a	Parzich GMBH	928979	300003143	ne		
12	n. a.	Band Reject filter	WRCG1855/1910-1835/1925-40/8SS	Wainwright	7	300003350	ev		
13	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	371	300003854	vlKl!	14.10.2011	14.10.2014
14	n. a.	MXE EMI Receiver 20 Hz bis 26,5 GHz	N9038A	Agilent Technologies	MY51210197	300004405	k	21.02.2013	21.02.2014

Agenda: Kind of Calibration

k	calibration / calibrated	EK	limited calibration
ne	not required (k, ev, izw, zw not required)	zw	cyclical maintenance (external cyclical maintenance)
ev	periodic self verification	izw	internal cyclical maintenance
Ve	long-term stability recognized	g	blocked for accredited testing
vlkl!	Attention: extended calibration interval		
NK!	Attention: not calibrated	*)	next calibration ordered / currently in progress

10 Observations

No observations exceeding those reported with the single test cases have been made.

Annex A Document history

Version	Applied changes	Date of release
1.0	Initial release	2013-08-01
-A	Correction of a typo in Band 13	2013-08-08
-B	IC –RSS References removed	2013-08-08

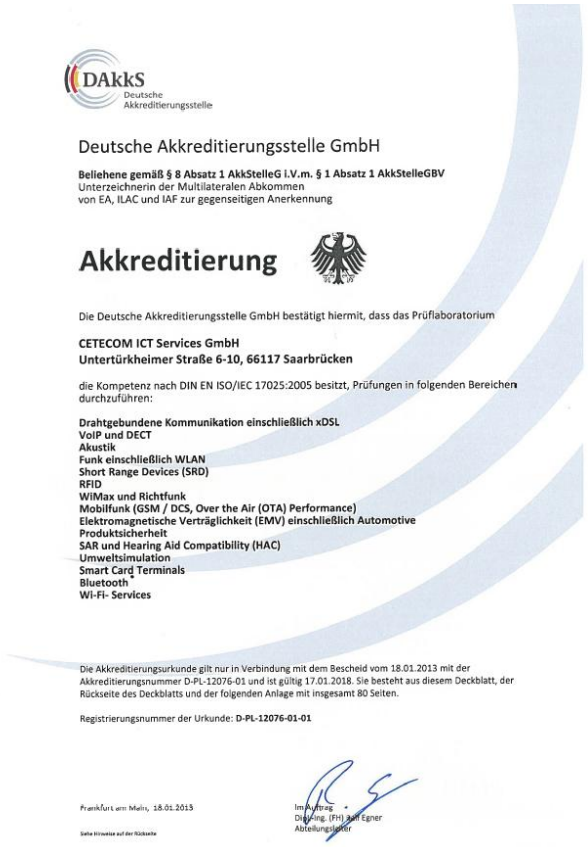
Annex B Further information

Glossary

AVG - Average
DUT - Device under test
EMC - Electromagnetic Compatibility
EN - European Standard
EUT - Equipment under test
ETSI - European Telecommunications Standard Institute
FCC - Federal Communication Commission
FCC ID - Company Identifier at FCC
HW - Hardware
IC - Industry Canada
Inv. No. - Inventory number
N/A - Not applicable
PP - Positive peak
QP - Quasi peak
S/N - Serial number
SW - Software

Annex C Accreditation Certificate

Front side of certificate



DAkkS Deutsche Akkreditierungsstelle

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Unterzeichnerin der Multilateralen Abkommen
von EA, ILAC und IAF zur gegenseitigen Anerkennung

Akkreditierung

Die Deutsche Akkreditierungsstelle GmbH bestätigt hiermit, dass das Prüflaboratorium

CETECOM ICT Services GmbH
Untertürkheimer Straße 6-10, 66117 Saarbrücken

die Kompetenz nach DIN EN ISO/IEC 17025:2005 besitzt, Prüfungen in folgenden Bereichen durchzuführen:

Drahtgebundene Kommunikation einschließlich xDSL
VoIP und DECT
Akustik
Funk einschließlich WLAN
Short Range Devices (SRD)
RFID
WiMax und Richtfunk
Mobilfunk (GSM / DCS, Over the Air (OTA) Performance)
Elektromagnetische Verträglichkeit (EMV) einschließlich Automotive
Produktsicherheit
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Smart Card Terminals
Bluetooth
Wi-Fi- Services

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Frankfurt am Main, 18.01.2013

Im Auftrag
Dr.-Ing. (FH) Arnt Egner
Abteilungsleiter

Siehe Hinweise auf der Rückseite

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ILAC: www.ilac.org
IAF: www.iaf.nu

Note:

The current certificate including annex is published on our website (see link below) or may be received from CETECOM ICT Services on request.

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